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The Effect of Participating in a Wind Ensemble on the Academic Achievement of Fifth and Sixth Grade Students

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Summary

The effect of musical learning on students' nonmusical achievement has received a considerable amount of attention from both researchers and practitioners for a long time. Many celebrated scholars, such as Horace Mann, John Dewey, and Lev Semenovich Vygotsky asserted that art-related curricula, including music curricula, help students improve their academic achievement. Their philosophical arguments varied, but all agreed that art and music education are vital to students' response to the teaching process.

Numerous studies have shown that studying music can help improve students' spatial reasoning ability, algebra skills, proportional reasoning ability, standard tests scores in mathematics, and English reading and writing ability. However, some researchers have argued that extant evidence does not adequately support the argument that learning music enhances academic achievement. In summary, whether learning music improves academic achievement remains controversial.

Studies exploring how musical learning affects the nonmusical achievements of Taiwanese are rare, indicating that this topic has long been neglected in Taiwan and must be researched to clarify the contradictory findings. In addition to attending formal school music programs, participating in a school music ensemble is the most convenient way for students to receive musical training in Taiwan. Does participating in a school music ensemble affect students'

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academic achievement? We reviewed the limited extant literature on this topic and found studies indicating that participating in a school ensemble enhances students' academic achievement, which is a result similar to the result of attending a formal school music program. However, still a few studies remained questionable.

Studies concerning the relationship between participating in a school music ensemble and academic achievement are rare, and have produced inconsistent results. Most of these studies used non-experimental research methods, and no study focused on school wind ensembles. Therefore, the authors believed there was still a need to redo an experimental research. The topic of the effects of participating in a school music ensemble on elementary school students' academic achievement in Chinese literacy and mathematics was chosen. An experimental research method was adopted to promote internal validity. Because randomly assigning children to join or refrain from joining a wind ensemble was infeasible, the authors used a precise matched quasi-experimental research method and selected a wind ensemble as an independent variable, to explore the non-musical outcome of elementary school students' participation in a school wind ensemble. The academic achievement instrument measuring Chinese literacy and mathematics achievement were the "Chinese Literacy Ability Test for the School-aged, Intermediate Level" and the "Mathematics Ability Test for the School-aged, Intermediate Level", respectively. The scores of the instruments were adopted as the dependent variables in this study.

Because fifth- and sixth-grade students have fully developed lungs and oral organs, which enables them to be proficient wind instrument players. Fifth- and sixth- grade students were selected as participants. Twenty-one wind ensemble students from a Taipei municipal elementary school were purposefully sampled as the experimental group, and 21 matched classmates who did not participate in the wind ensemble were selected as the control group. The experimental group participated in a wind ensemble training program 80 min per week for 32 weeks, and the control group received no training. Both groups were matched according to confounding factors, namely cognition ability (Raven's Standard Progressive Matrices [SPM] scores), gender, grade, academic achievement, mother's educational background, extracurricular tutoring, and musical instrument learning experience. Chi-square and *t*-test statistical analyses showed that there was no significant differences at the .05 level between the groups. Moreover, a one-way ANCOVA was conducted to control another critical covariate-pretest scores on the

academic instruments.

The results of the ANCOVA are provided as follows:

1. Chinese literacy achievement: After participating in the 32-week wind ensemble program, the experimental group improved significantly at the .05 level on reading comprehension skill and overall Chinese literacy achievement compared with the control group.
2. Mathematical achievement: The experimental group did not show a significant improvement at the .05 level on overall mathematics achievement, or on the concepts, calculation, application, fractions and proportions subtests of the mathematics achievement instrument compared with the control group.

The results of this study indicated that participating in a school wind ensemble can significantly improve the reading comprehension and overall Chinese literacy achievement of fifth- and sixth-grade elementary school students, which is consistent with the findings of studies conducted in other countries. However, because Chinese and English are different languages, the findings cannot be compared directly. This study also showed that participating in a school wind ensemble did not affect overall mathematics achievement or any subtest of the mathematics achievement instrument. This finding is inconsistent with some of the studies that have been discussed in this article.

The suggestions regarding research methods and implications of this study are provided as follows:

1. The development of additional comprehensive standard achievement tests is suggested when reproducing this study. Curriculum-based assessment, formative assessments, and informal assessments or regular school examinations can be employed to supplement the standard achievement tests.
2. The outcome of integrating specific subjects with music ensemble activity can be tested.
3. Other music ensembles, such as string ensembles, guitar ensembles, and ukulele ensembles, can be examined to reproduce this study and verify the findings.
4. Special needs students, both disabled and gifted, can be included as participants to determine whether participating in music ensembles improves their academic performance.
5. Randomly assigning the participants into experimental or control groups outside the

school setting is suggested to improve the external validity. In addition, integrating a qualitative research method is recommended to enable the participants' feelings and perceptions to be recorded.

6. The present study measured Chinese literacy, which differs from English literacy; therefore, the results cannot be compared directly with studies conducted in non-Chinese-speaking countries. We suggest performing a cross-cultural comparison concerning this topic.
7. In addition to serving an affective function, participating in a wind ensemble helps fifth- and sixth- grade students improve their reading comprehension skills as well as overall Chinese literacy achievement; therefore, we suggest that educational authorities and school administrators provide funds, and other resources to promote school wind ensembles as much as possible.
8. These findings can assist wind ensemble teachers in establishing and popularizing wind ensembles nationwide.

Keywords: music education, academic achievement, school wind ensemble